Perform jet grouting: monitor rates, diameter, and strength

Perform jet grouting with an interactive checklist to monitor pressures, rotation/withdrawal rates, column diameter, and strength tests. Commentable and easy to export as PDF/Excel.

Project:
Date:
Filled by:

Pre-Production and Setup

1	Confirm approved jet grouting method, target column diameter/length, and parameter windows from trial columns; evidence: signed method statement, ITP, and trial report per approved project specifications and authority requirements.
2	Survey and stake borehole locations; verify offsets and elevations within project survey tolerance; evidence: total station report, as■staked photos, and superintendent initials.
3	Prepare spoil containment and return lines to avoid ground or water contamination; evidence: photos of bunds, labeled bins, and daily environmental checklist.
4	Confirm grout mix design and batching procedure; record cement lot numbers, water/cement ratio, admixtures; measure Marsh cone time and density; acceptance: within approved parameter band; evidence: batch tickets and QC log.

Equipment Calibration

5	Calibrate pressure transducers and flowmeters with traceable standards; acceptance: accuracy ±1% F.S.; evidence: calibration certificates and pre-shift verification readings.
6	Verify rotation encoder accuracy using handheld tachometer; acceptance: within ±5% of setpoint; evidence: tachometer reading, data logger comparison screenshot.
7	Check hoist/withdrawal speed using encoder and stopwatch over a fixed stroke; acceptance: within ±5% of target; evidence: timed trial sheet and logger trace.
8	Measure nozzle diameter with certified pin gauges; acceptance: within manufacturer tolerance; evidence: measurement record and nozzle serial photo.
9	Synchronize data logger clock to GPS/NTP; acceptance: time drift <1 s; evidence: sync screenshot and logger status report.

Production Monitoring	
10	At startup, record grout temperature (°C), density (kg/m³), and Marsh viscosity (s); acceptance: within approved band; evidence: hourly QC log with operator signature.
11	Maintain pump pressure within trial-defined control limits; configure alarm if outside limits >3 s; evidence: real-time pressure chart and alarm log.
12	Hold rotation rate within target ±10%; evidence: encoder trend versus depth and annotated deviations with corrective action.
13	Hold withdrawal rate within target ±10%; evidence: hoist speed trend versus depth and supervisor sign-off on exceptions.
14	Verify grout flow rate stability; acceptance: within approved band with no sustained oscillation; evidence: flow chart and operator notes.
15	Observe spoil returns for volume and color; capture start/mid/end photos; flag sudden changes indicating loss of energy or obstruction; evidence: photo set and log entry.
16	Apply pause/recovery plan when pressure spikes or flow drops beyond limits; ream as specified; evidence: downtime record, cause, and restart parameters.

Column Geometry Control	
17	Log start depth and final toe elevation with depth encoder; acceptance: toe within project tolerance of design; evidence: depth log and survey cross-check.
18	Measure column diameter at specified elevations using downhole caliper or trial pit/excavation (where safe); acceptance: within project tolerance; evidence: measurement sheets and photos.
19	Check overlap between adjacent columns against design grid; acceptance: meets or exceeds specified minimum overlap; evidence: as■built sketch with measured diameters and survey file.

Sampling and Testing	
20	Extract diamond cores from selected columns after curing; test 28■day UCS per approved project specifications; acceptance: meets specified MPa; evidence: core logs, chain of custody, and lab report.
21	Cast grout control cylinders from plant discharge for mix consistency (not structural acceptance); test at 7/28 days; acceptance: within mix control band; evidence: cylinder IDs and lab results.
22	Measure fresh grout density hourly with mud balance; acceptance: within ±20 kg/m³ of target; evidence: QC density log and batch references.

Documentation and Acceptance	
23	Export daily data files (CSV/PDF) showing pressure, flow, rotation, and withdrawal versus depth at ≥1 Hz; evidence: file names, storage path, and reviewer initials.
24	Complete lot-based ITP with contractor, inspector, and engineer digital signatures; archive with QR-authenticated link; evidence: signed checklist and QR scan validation.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Perform jet grouting safely and consistently with this field-ready monitoring and testing checklist. Focused on soilcrete columns formed by high-energy jets, it guides jet grouting monitoring of pump pressure, grout flow, rotation rate, withdrawal rate, and data capture—excluding permeation grouting. Use it to set and enforce parameter windows proven in trial columns, maintain column geometry, and verify performance through diameter measurements and compressive strength tests. The checklist aligns with typical single-fluid and multi-fluid jet systems while leaving exact values to approved project specifications and authority requirements. You will log calibrated readings in SI units, document spoil returns, confirm column overlap, and obtain UCS evidence from cores or approved alternatives. The result is predictable columns with reduced variability, minimized ground movement risk, and clean, auditable records for acceptance. Start in interactive mode to tick steps, add comments or photos, and export PDF/Excel with a QR-secured record.	1. Preparation: gather approved method statement, trial report, ITP, calibration certificates, survey files, batch tickets, and PPE; define parameter windows and sampling frequencies. 2. Set up data logger channels (pressure, flow, rotation, withdrawal, depth) and alarms; sync time and verify sensor zero and span. 3. Safety and site readiness: secure spoil containment, check return lines, establish exclusion zones, and brief crew on pause/recovery rules. 4. Using the Interactive Checklist: start interactive mode on a tablet, select lot/column ID, and assign roles. 5. Tick items as completed, attach photos and charts, and add comments for any deviation with corrective actions and approvals. 6. Export to PDF/Excel at shift end, embedding data plots and measurements; generate a QR code for authentication. 7. Sign-Off: obtain digital signatures from contractor, inspector, and engineer; distribute the signed package to stakeholders. 8. Archive: store files in the project repository with consistent naming and cross-reference to as-built drawings.